

(19)

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(11)

EP 0 923 872 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
23.06.1999 Bulletin 1999/25

(51) Int. Cl.⁶: A23B 4/023, A23L 1/314

(21) Application number: 98650083.3

(22) Date of filing: 08.12.1998

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: 09.12.1997 IE 970866

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(54) A method and apparatus for producing cooked bacon slices

(57) Cooked bacon slices are produced substantially continuously by slicing raw pork bellies at a temperature of typically -1°C to form slices of raw pork which are laid flat on an openwork mesh belt 4. Upper and lower spray heads 33, 34 apply a curing solution onto top and underneath faces of the slices 3 on the conveyor 4. The conveyor 4 delivers the raw pork slices 3 with the curing solution applied to a continuous cooker 6 in which the slices 3 are cooked at about 275°C for about 2 minutes. The cooked bacon slices are thus produced substantially continuously to a high quality and with reduced labour input.

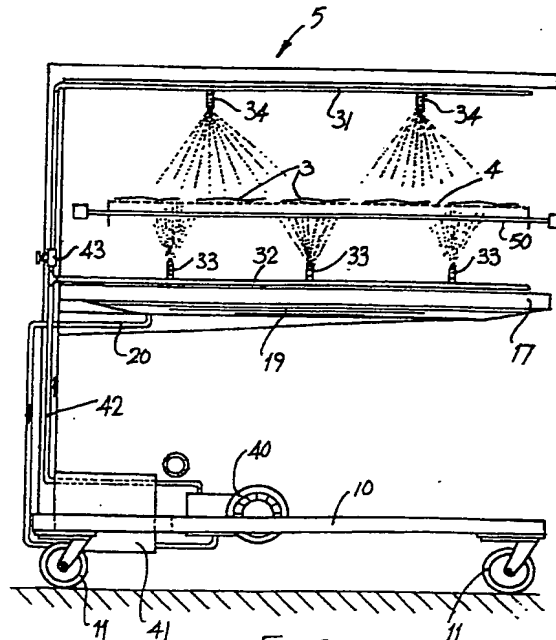


Fig. 2

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ably the conveyor has an openwork support belting, ideally a mesh belting.

[0017] In one embodiment of the invention the application means comprises a spray means for spraying the curing liquid onto the raw pork slices. Preferably the spray means comprises upper and lower spray heads for applying curing liquid to both faces of the raw pork slices supported on the conveyor.

[0018] Most preferably the apparatus includes a tray for collecting excess curing liquid not taken up on application to the raw pork slices. In this case preferably there is a recycling pump for recycling excess curing liquid collected in the tray to the application means.

[0019] In one embodiment of the invention the upper spray means comprises at least two spray heads spaced-apart above the conveyor for applying overlapping sprays of curing liquid onto the raw pork slices.

[0020] Preferably the lower spray means comprises at least two spray heads spaced-apart below the conveyor for applying overlapping sprays of curing liquid onto the under face of the raw pork slices. Ideally the lower spray means comprises three spray heads spaced apart below the conveyor for applying overlapping sprays of curing liquid onto the raw pork slices.

[0021] The apparatus also preferably includes valve means for controlling the flow of curing liquid to the application means.

Brief Description of the Drawings

[0022] The invention will be more clearly understood from the following description therefore given by any of example only with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view of apparatus for producing cooked bacon slices according to the invention;

Fig. 2 is an end view of an applicator means of the apparatus of Fig. 1;

Fig. 3 is a plan view of a conveyor part of the apparatus;

Fig. 4 is perspective view of the applicator means;

Fig. 5 is an end view of the applicator means; and

Fig. 6 is a perspective, partially exploded view of the applicator means;

Detailed Description

[0023] Referring to the drawings there is illustrated an apparatus and method for producing cooked bacon slices substantially continuously. The apparatus comprises a slicer 1 for slicing raw pork bellies at a temperature of typically - 1°C to form slices 3 of raw pork which

are laid flat on a support provided by a conveyor in the form of an openwork mesh belt 4. The slices are sliced to a thickness of from 1 to 6 mm, preferably 1.5 to 2 mm. The conveyor belt 4 delivers the raw pork slices 3 to an applicator means 5 which applies a curing solution to both flat faces of the slices 3 on the belt 4.

[0024] The conveyor belt 4 then delivers the raw pork slices 3, with the curing solution applied, to a continuous cooker 6 in which the pork slices 3 are cooked at a temperature of from 270°C to 280°C, preferably 275°C for a period of from 1 to 5, most preferably approximately 2 mins. To optimise the slicing, curing and cooking, process cooking is commenced within 30, and most preferably within about 15 seconds of the application of the curing liquid. After cooking, the cooked cured slices may be diced to a desired size prior to freezing.

[0025] The curing solution applied is in this case a mixture of approximately 20 wt% of sodium chloride, approximately 600 ppm of sodium nitrate, and a smoke flavour, typically 3 wt% of liquid smoke flavour. The smoke flavour may be a mixture of smoke flavour such as a 2:1 ratio of flavour types LFDN and P50 available from Red Arrow.

[0026] The curing solution is applied at a rate to achieve an uptake of approximately 10% by weight of the pork slices corresponding to an application rate of 10 litres per 100 kg of meat.

[0027] The curing solution is applied using the applicator 5 which is shown in detail in Figs. 2, and 4 to 6. The applicator 5 comprises a chassis 10 fitted with wheels. Four support legs 12, 13, 14, 15 extend upwardly from the chassis 10. For ease of moving the applicator into and out of the in-line position illustrated in Fig. 1 one pair 14, 15 of the support legs are movable as illustrated in Fig. 6 for pushing the applicator into the in-line position of Fig. 1 and are readily bolted back into the support position. Cross members 17, 18 extend between the legs 12, 14 and 13 and 15 and these support an excess curing liquid collection tray 19 having an outlet pipe 20 for delivery of collected curing liquid to a supply tank 41.

[0028] The support leg 12 extends upwardly and an upper cross member 30 extends outwardly therefrom and supports an upper spray bar 31. A lower spray bar 32 is supported on the cross member 17.

[0029] Referring particularly to Fig. 2 it will be noted that in this case the lower spray bar 32 is fitted with three lower spray heads 33 to deliver a spray of curing liquid to the underface of the pork slices 3 on the mesh belt 4. The lower spray heads 33 are spaced-apart to deliver an even spray of curing liquid to the lower face of the pork slices 3 on the belt 4. Similarly, the upper spray bar 31 is fitted with two spray heads 34 which are positioned to deliver an even spray of curing liquid to the upper face of the slices 3 on the mesh belt 4. Excess curing solution which is not taken up by the pork slices 3 is collected by the recycle tray 19. In this way an even spread of curing liquid is applied to both the top and

means (4) for leading the cured slices (3) to a cooker (6); and

a cooker (6) for substantially continuously cooking the raw slices (3) with the curing liquid applied. 5

13. Apparatus as claimed in claim 12 wherein the means (4) for leading the cured slices to the cooker comprises a conveyor (4), preferably the conveyor (4) has an openwork support belting 4, preferably the belting is of mesh material (4). 10

14. Apparatus as claimed in any of claim 12 or 13 wherein the application means (5) comprises a spray means (31, 32, 33, 34) for spraying the curing liquid onto the raw pork slices (3), preferably the spray means (31, 32, 33, 34) comprises upper (31, 34) and lower spray heads (32, 33) for applying curing liquid to both faces of the raw pork slices (3) supported on the conveyor (4). 15 20

15. Apparatus as claimed in any of claims 12 to 14 including a tray (19) for collecting excess curing liquid not taken up on application to the raw pork slices (3), preferably the apparatus includes a recycling pump for recycling excess curing liquid collected in the tray (19) to the application means (31, 32, 33, 34). 25

16. Apparatus as claimed in any of claims 12 to 15 wherein the upper spray means (31, 34) comprises at least two spray heads (34) spaced-apart above the conveyor (4) for applying overlapping sprays of curing liquid onto the raw pork slices (3). 30 35

17. Apparatus as claimed in any of claims 12 to 16 wherein the lower spray means (32, 33) comprises at least two spray heads (33) spaced-apart below the conveyor (4) for applying overlapping sprays of curing liquid onto the underface of the raw pork slices (3), preferably the lower spray means (32, 33) comprises three spray heads (33) spaced apart below the conveyor (4) for applying overlapping sprays of curing liquid onto the raw pork slices (3). 40 45

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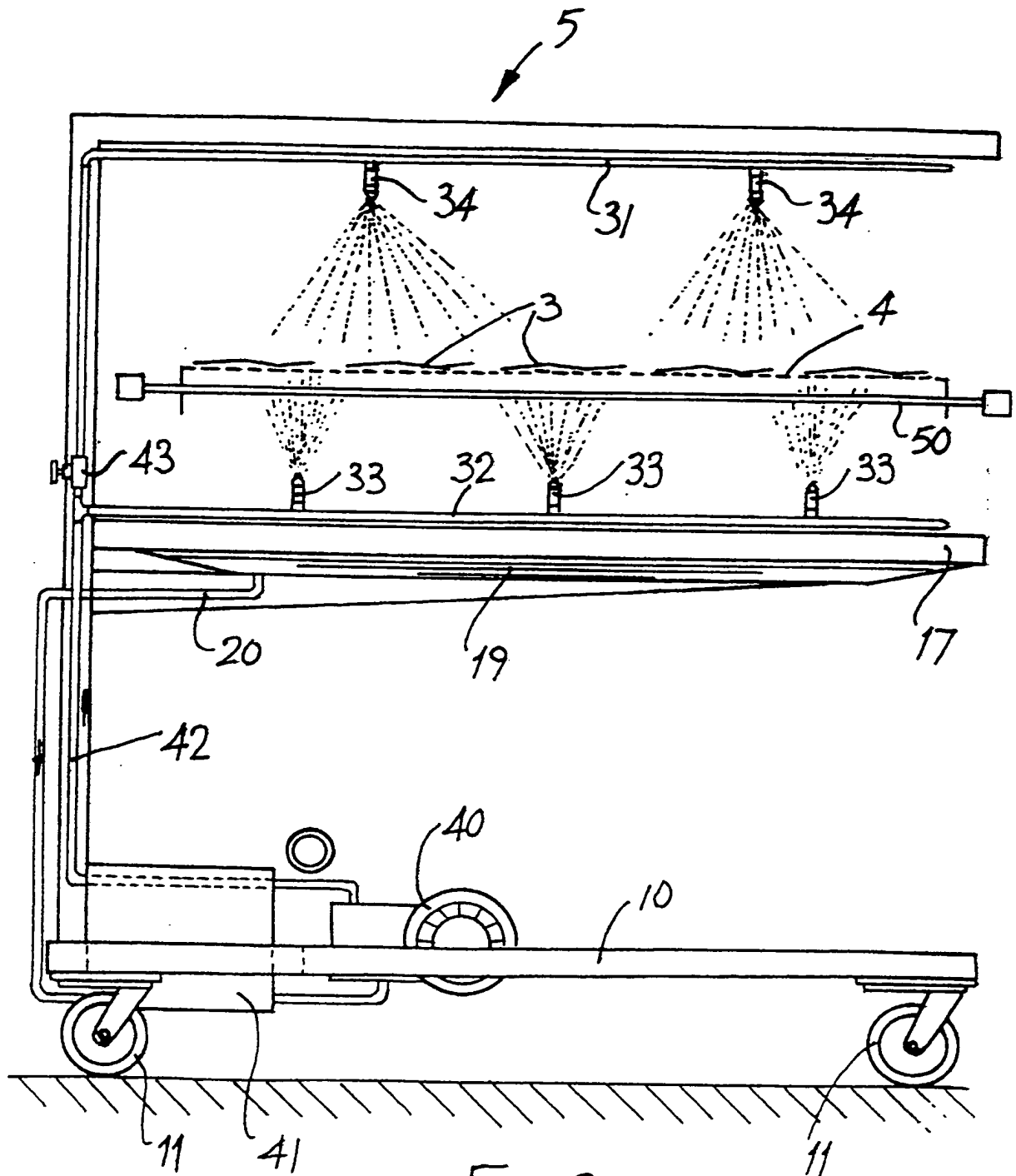


Fig. 2

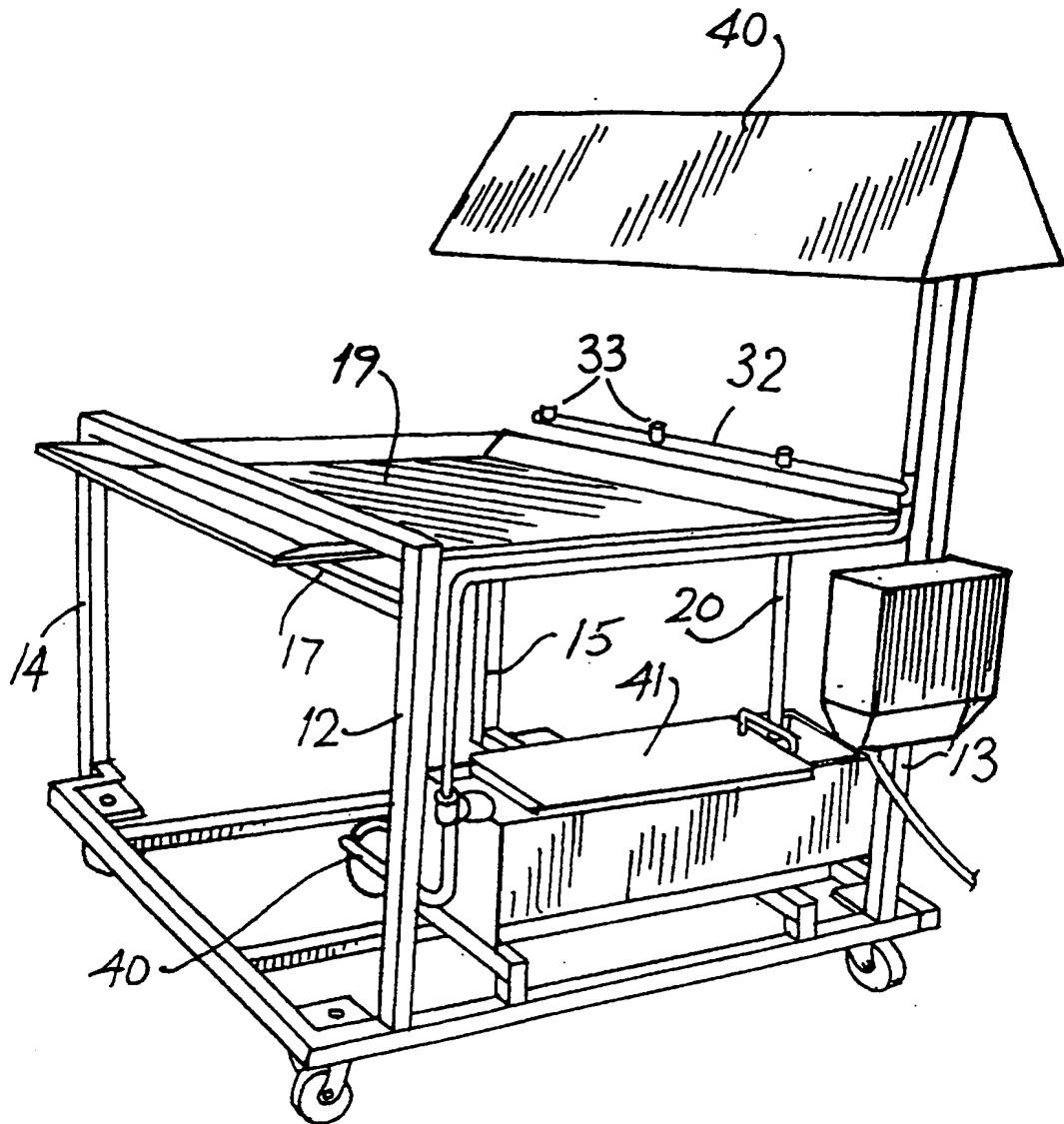


Fig. 4

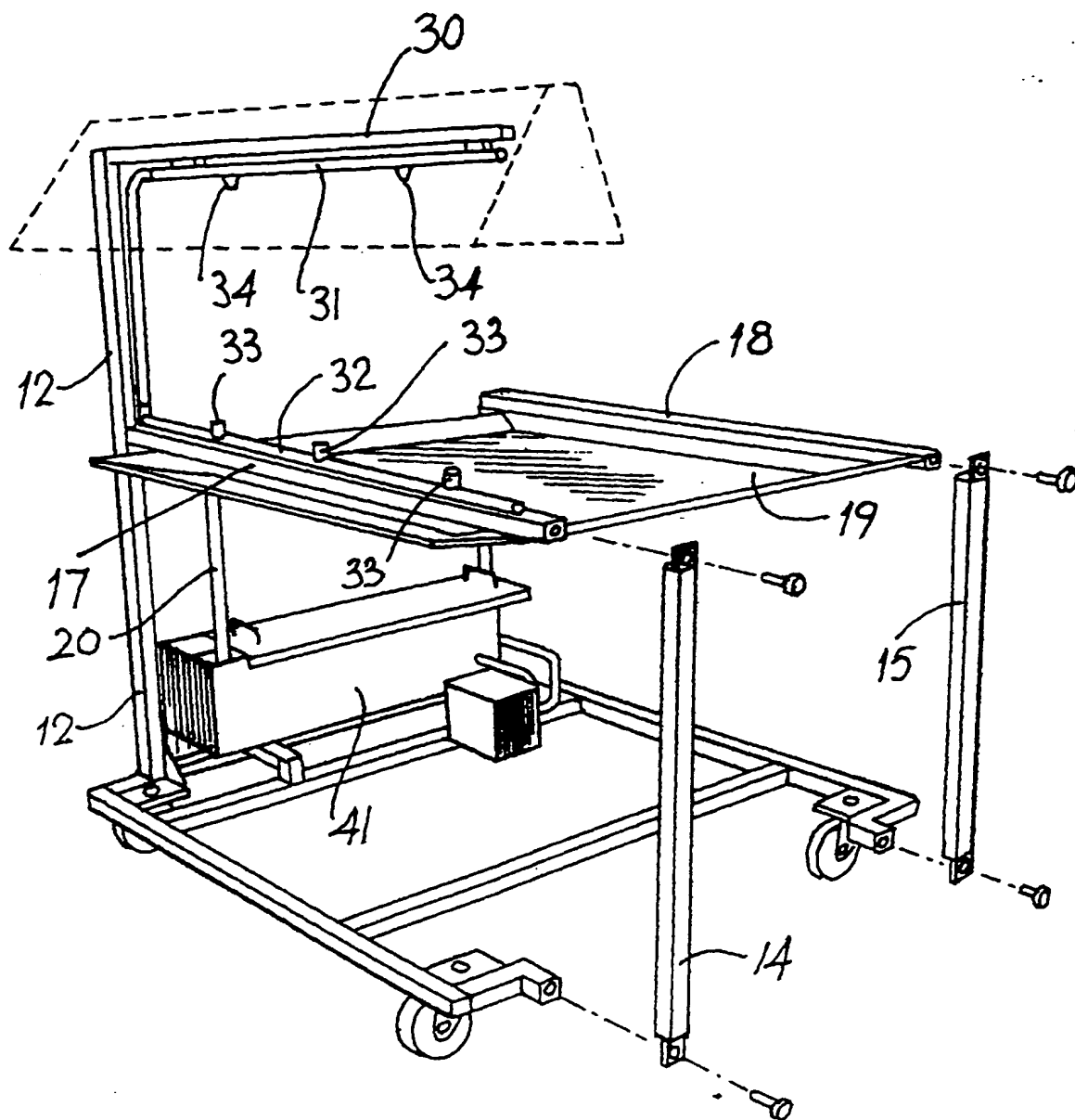


Fig. 6